

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

Claim 1 (Currently amended): A miniature self contained sensor module adapted for use in medical applications, the sensor module comprising:

a first ~~at least one~~ substrate defining an exterior surface of the sensor module and comprising a cavity having an opening at a surface of the first substrate;

a second substrate within the cavity of the first substrate;

at least one miniature sensor supported by ~~disposed in part on~~ the first substrate and exposed on the exterior surface of the sensor module to sense a physiological parameter surrounding the sensor module;

electronics within the cavity, the electronics comprising an inductor coil and an integrated circuit die, the electronics being adapted to receive ~~an electrical circuit disposed on the substrate wherein the circuit receives~~

operating power from a magnetic field with the inductor coil, condition a sensor signal, and transmit ~~an inductor coil; conditions a sensor signal; transmits~~ a conditioned sensor signal to an external signal detection system via magnetic telemetry;

electrical connections interconnecting the sensor with the electronics, at least a portion of the electrical connections being on the second substrate;
and

means for hermetically sealing the opening of the cavity and enclosing the electronics, the second substrate and the electrical connections within the cavity, wherein at least a portion of the sensor is exposed outside the hermetic sealing means for sensing the physiological parameter surrounding the sensor module.

Claim 2 (Currently amended): The sensor module of claim 1, wherein the first substrate is an integral part of the sensor.

Claim 3 (Currently amended): The sensor module of claim 2, wherein the first substrate is mechanically flexible.

Claim 4 (Currently amended): The sensor module of claim 2, wherein the first substrate is mechanically rigid.

Claim 5 (Currently amended): The sensor module of claim 1, wherein a second portion of the electrical connections ~~for the electrical circuit and sensor are disposed on the substrate~~ is on the first substrate and electrically connects the sensor to the portion of the electrical connections on the second substrate.

Claim 6 (Currently amended): The sensor module of claim 1, wherein the first substrate has a recess adjoining the cavity and the second substrate is electrically connected to the sensor at the recess. ~~the electrical connections for the electrical circuit and sensor are disposed on a secondary substrate.~~

Claim 7 (Currently amended): The sensor module of claim 6, wherein the recess has a wedge-shaped portion and electrical contacts that are electrically coupled to the sensor, the second substrate comprises a wedge-shaped feature that is complementary to and received in the wedge-shaped portion of the recess, and the wedge-shaped feature is self-aligned by the

wedge-shaped portion to electrically connect the electrical connections on the second substrate with the contacts of the wedge-shaped portion. ~~claim 1,~~
~~wherein the electrical connections are apportioned among the first and second substrates.~~

Claim 8 (Currently amended): The sensor module of claim 6, wherein the second ~~secondary~~ substrate is flexible.

Claim 9 (Currently amended): The sensor module of claim 1 wherein the second substrate is connected to the inductor coil through at least one of ~~connection of said substrate to said coil is achieved through one or more or a combination thereof~~ the following: solder, wirebond, flip chip technologies, epoxy, ~~expoxy~~, localized welding, compression, ~~compression~~ thermal compression.

Claim 10 (Currently amended): The sensor module of claim 1 wherein the second substrate is connected to the sensor through at least one of ~~connection of said substrate to said sensor is achieved through one or more or a combination thereof~~ the following: solder, wirebond, flip chip technologies,

epoxy, ~~epoxy~~, localized welding, compression, ~~compression~~ thermal compression.

Claim 11 (Currently amended): The sensor module of claim 1 wherein the second substrate is connected to the electronics through at least one of ~~connection of said substrate to said electrical circuits is achieved through one or more or a combination thereof~~ the following: solder, wirebond, flip chip technologies, epoxy, ~~epoxy~~, localized welding, compression, ~~compression~~ thermal compression.

Claim 12 (Currently amended): The sensor module of claim 1, wherein the electronics ~~electrical circuit~~ receives information from an external system.

Claim 13 (Currently amended): The sensor module ~~system~~ of claim 1 wherein at least a portion of the ~~said~~ sensor module is coated with one or more layers of thin coatings.

Claim 14 (Currently amended): The sensor module ~~system~~ of claim 13 wherein the one or more layers of thin coatings are formed from at least

one coating material chosen from the group consisting of: ~~coating materials~~
~~include but are not limited to one or more or any combination thereof:~~ silicone,
hydrogels, parylene, polymer, nitrides, oxides, nitric-oxide generating
materials, carbides, silicides, titanium.

Claim 15 (Currently amended): A miniature self contained ~~sensor~~
module adapted for use in medical applications, the module comprising:

a first ~~bottom~~ substrate defining an exterior surface of the module and
comprising a cavity having an opening at a surface of the first substrate; ~~of~~
~~five of six possible walls;~~

~~at least one miniature sensor or actuator disposed on the substrate;~~
electronics within the cavity of the first substrate, the electronics
comprising an inductor coil and an integrated circuit die bonded to the first
substrate, the electronics being adapted to receive ~~an electrical circuit~~
~~disposed in the bottom substrate cavity wherein the circuit: receives~~ operating
power from a magnetic field with the inductor coil, condition a signal, and
transmit a conditioned signal ~~an inductor coil; conditions a sensor signal;~~
~~transmits a conditioned sensor signal~~ to an external signal detection system
via magnetic telemetry;

a second substrate within the cavity of the first substrate;
a third substrate bonded to the surface of the first substrate,
hermetically sealing the opening of the cavity, and enclosing the electronics
and the second substrate within the cavity;
at least one miniature device ~~sensor or actuator~~ disposed on the third
substrate and exposed on the exterior surface of the module, the device being
chosen from the group consisting of sensors and actuators; and
electrical connections disposed on the second substrate and
interconnecting the device with the electronics.
~~a top substrate enclosing the sensor and electronics by forming the~~
~~sixth cavity wall.~~

Claim 16 (Currently amended): The ~~sensor~~ module of claim 15
wherein the at least one miniature device comprises a sensor adapted to
sense a physiological parameter surrounding the module. ~~the sensors include~~
~~a pressure sensor.~~

Claim 17 (Currently amended): The ~~sensor~~ module of claim 16,
wherein the sensor is a pressure sensor ~~15, wherein the sensors include a~~

~~pressure and temperature sensor.~~

Claim 18 (Currently amended): The ~~sensor~~ module of claim 15,
wherein the at least one miniature device comprises an actuator. ~~the sensors~~
~~include two pressure sensors.~~

Claims 19 and 20 (Canceled)

Claim 21 (Currently amended): The ~~sensor~~ module of claim 15, ~~claim~~
~~20,~~ wherein the second ~~secondary~~ substrate is flexible.

Claim 22 (Currently amended): The ~~sensor~~ module of claim 21,
wherein the first substrate has a recess adjoining the cavity and the second
substrate is electrically connected to the device at the recess. ~~the flexible~~
~~substrate connects to the sensor at a recess in the bottom substrate.~~

Claim 23 (Currently amended): The ~~sensor~~ module of claim 22,
wherein the recess has a wedge-shaped portion and electrical contacts that
are electrically coupled to the device, the second substrate comprises a

wedge-shaped feature that is complementary to and received in the wedge-shaped portion of the recess, and the wedge-shaped feature is self-aligned by the wedge-shaped portion to electrically connect the electrical connections on the second substrate with the contacts of the wedge-shaped portion. ~~the flexible substrate aligns with the bottom substrate recess with a matched wedge shape.~~

Claim 24 (Currently amended): The module ~~system~~ of claim 15 wherein at least a portion of the ~~said sensor~~ module is coated with one or more layers of thin coatings.

Claim 25 (Currently amended): The module ~~system~~ of claim 24 wherein the one or more layers of thin coatings are formed from at least one coating material chosen from the group consisting of: ~~coating materials include but are not limited to one or more or any combination thereof:~~ silicone, hydrogels, parylene, polymer, nitrides, oxides, nitric-oxide generating materials, carbides, silicides, titanium.

Claims 26-57 (Canceled)

Claim 58 (Currently amended): The sensor module of claim 1 wherein the ~~said~~ module is adapted for use in at least one application chosen from the group consisting of: ~~used for applications including but not limited to one or more of the following:~~ monitoring cardiovascular diseases, monitoring congestive heart failure, monitoring congenital heart diseases, monitoring diseases related to intracranial pressure, monitoring abdominal aortic aneurysm, monitoring intraocular pressure for eye related diseases including but not limited to glaucoma, monitoring urinary diseases, and monitoring gastrointestinal diseases.

Claim 59 (Currently amended): The ~~sensor~~ module of claim 15 wherein the ~~said~~ module is adapted for use in at least one application chosen from the group consisting of: ~~used for applications including but not limited to one or more of the following:~~ monitoring cardiovascular diseases, monitoring congestive heart failure, monitoring congenital heart diseases, monitoring diseases related to intracranial pressure, monitoring abdominal aortic aneurysm, monitoring intraocular pressure for eye related diseases including but not limited to glaucoma, monitoring urinary diseases, and monitoring gastrointestinal diseases.

Claim 60-61 (Canceled)

Claim 62 (Currently amended): The sensor module of claim 1 wherein the at least one miniature device comprises a sensor that measures one or more of the following physiological parameters: ~~parameters~~ pressure, temperature, flow, blood composition, blood gas content, chemical composition, acceleration, vibration.

Claim 63 (Currently amended): The ~~sensor~~ module of claim 15 wherein the at least one miniature device comprises a sensor that measures one or more of the following physiological parameters: ~~parameters~~ pressure, temperature, flow, blood composition, blood gas content, chemical composition, acceleration, vibration.

Claims 64-73 (Canceled)

Claim 74 (New): The sensor module of claim 1, wherein the first substrate defines a cylindrical-shaped package that houses the electronics and the inductor coil thereof.

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Claim 75 (New): The module of claim 15, wherein the first substrate defines a cylindrical-shaped package that houses the electronics and the inductor coil thereof.